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Agrarian Crisis in Brazilian Amazonia:
The Grande Carajás Programme

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SUMMARY

Three decades of government intervention in favour of export-oriented, large-scale commercial farming in Brazilian Amazonia have contributed significantly to a situation of agrarian crisis in the region. This takes the form of increasingly violent rural conflict, land concentration, landlessness, environmental degradation and a growing food deficit. After tracing the roots of this crisis in official rural development policy for Amazonia, the paper focuses on the most recent large-scale initiative, the Grande Carajás Programme, and shows how it will merely exacerbate current trends. Associated agrarian reform plans are also considered, and the article concludes by suggesting that before any improvement in the agrarian situation can be expected, the long-standing policy bias against small farmers in Amazonia will have to undergo a fundamental reassessment.

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INTRODUCTION

The rapid occupation of Brazilian Amazonia, particularly over the last three decades, has produced an agrarian crisis of unprecedented proportions. This crisis has been clearly manifested in a number of closely related social and economic phenomena: an increasingly violent struggle over land, concentration of property ownership, dispossession of peasant farmers, encroachment upon indigenous territories, environmental degradation and a growing food deficit. The purpose of this article is basically two-fold. Firstly, it examines the precise nature of the agrarian crisis in Amazonia and traces its roots in official government policy towards the region. Secondly, it looks specifically at the latest agricultural development plans and incentive schemes for the vast area of Eastern Amazonia covered by the Grande Carajás Programme (Programa Grande Carajás - PGC) as well as the likely impact on this region of the recently announced national plan for agrarian reform.

THE AGRARIAN CRISIS

The most evident feature of the agrarian crisis currently affecting large areas of Brazil's Amazon basin is the rapid increase in violent conflicts caused by competition for land amongst smallholder squatters (posseiros), larger commercial farmers and indian groups. Such clashes of interest are certainly nothing new to the region and land-grabbing (grilagem) may be traced back to the 1950s when the Centre-West (Mato Grosso) replaced the southern state of Paraná as the principal destination for poor rural migrants [Goodman, 1978]. Peasant

settlers were soon followed by cattle ranchers, encouraged by large official subsidies, who started to squeeze out the smallholders, continuing and intensifying a process of land concentration which originated in the Portuguese colonial system of land grants. Starting from a highly inegalitarian base structure, Brazilian agriculture has undergone a process of 'painful modernisation' [Graziano da Silva, 1981 and 1984] in which symptoms of the agrarian crisis now visible in Amazonia have previously manifested themselves in the Centre-South and North-East of the country. Official subsidies for export crops have fostered land concentration, rural conflict and out-migration to the Amazonian frontier, where the crisis is being replicated in a more extreme form.

Official stimuli to frontier expansion in Amazonia since the military coup of 1964 has speeded up occupation and helped to produce an intensification of land conflicts. In eastern Amazonia, the most densely populated and longest settled part of the region, land-grabbing and violent confrontation have increased substantially, closely following the expansion of the road network over the past 20 years [Asselin, 1982]. By 1981 over half of all land conflicts in Brazil took place in the Amazon region [LARR, 23 April, 1982]. The latest and most comprehensive report on the situation reveals that of 320 conflicts resulting in deaths in the Brazilian countryside in 1985 (three times the figure for 1984), half occurred in the Amazonian states of Maranhão, Pará and Goiás [MIRAD, 1986b]. In the first six months of 1985 no fewer than 36 rural workers from only three municipalities in the Carajás project area (Marabá, Sao João do

Araguaia and Xinguara) died at the hands of gunmen in land conflicts [CEPASP, 1986], while 16 such deaths occurred in a two-week period in May of 1986 in the same region around Imperatriz [Ashford, 1986]. The increasing scale and intensity of attrition in Amazonia has prompted strong protests from organizations of rural workers and indigenous groups, from professional bodies and from the National Conference of Brazilian Bishops, culminating in a well-publicised intervention by federal police in June 1986 ostensibly to disarm both peasants and landowners' private militia in the Imperatriz region [CNBB, May 1986: The Times, 17 June, 1986].

The mounting volume of evidence from journalistic, academic and even official sources on the extent of rural violence in Amazonia leaves no doubt as to the gravity of an agrarian crisis in which several million small farmers and their families are struggling to secure a livelihood against growing pressures from a relatively small number of large and politically powerful landowners (both individuals as well as corporate enterprises), many of whom have accumulated land for purely speculative purposes. Environmental degradation has also proceeded at a steady pace. In southern Pará, in the centre of the Carajás area, where cattle ranching is well established, Landsat surveys have shown that by 1983 some 14% of the rainforest had been removed, increasing to 32% in the municipality of Conceição do Araguaia. Many estates flout laws limiting deforestation which, it is estimated, is increasing by 22% p.a. [Pinto, 1986a].

The major direct cause of rural violence has been the phenomenon of land concentration, which has progressed at a spectacular pace over the past thirty years. In 1967 in Brazil as a whole properties of less than 10 ha accounted for 36% of the total number but occupied only 2% of the cultivated area. In 1978 their number went down proportionately to 28% of properties but the area occupied halved to only 1%. On the other hand, holdings of 10,000 ha or more which in 1967 represented 1% of properties increased their share of agricultural land from 16% to 25% in 1978 [Graziano da Silva, 1981]. From 1960-80 the average size of smallholdings under 10 ha fell from 4.0 to 3.4 ha while larger estates increased their average size from 24,354 ha to 26,367 ha [IBASE, 1984]. Land concentration has resulted, predictably, in polarisation of income. From 1970-80 the poorest 50% of the rural population saw its share of rural income fall from 22.4% to 14.9%, while the wealthiest 5% enjoyed an increase from 23.7% to 44.9% [Coelho, 1985].

Amazonian frontier expansion has traditionally been spearheaded by small farmers squeezed out of their traditional areas in the North East and Centre-South. Land concentration in these areas has been encouraged by the spread of large-scale, export-oriented commercial farming, boosted by heavy state subsidies for soya bean production, sugar-cane for the PROALCOOL programme and cattle ranching, amongst others. In the North-East even special programmes of assistance designed to give farmers protection against drought (such as the Projeto Sertanejo) have been found to convey disproportionately large benefits to cattle

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ranchers rather than small producers and landless farmers who are the most vulnerable groups [World Bank, 1983].

These pressures have encouraged out-migration to both urban and frontier zones, but rather than Amazonia offering the opportunity for a balanced process of small farmer occupation, absorbing and settling the excess rural population from other regions, it has merely reproduced in a perhaps more extreme form the same monopoly over land. In the Centre-West state of Mato Grosso, for example, the oldest Amazonian frontier zone, properties of under 10 ha account for 25% of the total number of holdings but occupy only 0.3% of the cultivable land, while 0.9% of properties with over 10,000 ha control 29% of the land [Goodman, 1978]. About 95% of new farms in the Amazon region occupy 10,000 ha or more [LARR, 23 April, 1982]. Further evidence of land concentration is provided by the agricultural Census, which shows that in the municipality of Santa Luzia in the heart of the PGC area, for example, the number of smallholder squatters or ocupantes fell by 20% from 1975-80 but the total area occupied by these farms decreased by 74%, indicating a strong polarisation of landownership and corresponding expulsion of the small farming population [Wagner, 1985]. In eastern Amazonia as a whole 0.1% of farms larger than 10,000 ha occupy 30% of the land, while small farms of less than 100 ha which account for 70% of establishments control only 11% of the land [Hecht, 1983]. The number of rural families in Brazil with no land of their own is currently estimated at some ten million or more [Coelho, 1985].

A less well known indicator of agrarian crisis in Amazonia is the growing food deficit brought about by increasing ownership of land for either speculative reasons or for the production of commercial crops which do nothing to supply domestic food markets. A major cause of malnutrition in developing countries is not absolute shortages of food but sheer poverty leading to a lack of effective demand which reduces people's food 'entitlement' [Sen, 1981]. Yet there are instances where the rapid expansion of commercial farming can lead to a situation of food deficit which drives up prices beyond the reach of the poor rural and urban population. It was shown above that, in Brazil for example, properties of less than 10 ha are diminishing in both number and in the area of land cultivated. Yet these smallholdings are responsible for most basic food crop production: 70% of corn, 81% of beans and 90% of manioc or cassava. Due to land concentration and official support for commercial crops, the production of sugar-cane and soya increased by 81% and 376% respectively from 1971 to 1981. A corresponding loss of smallholders' lands and lack of government assistance also resulted in the production of beans and cassava falling by 8% and 14% respectively in the same period, trends which have continued to the present day [IBASE, 1984b]. By 1983 food production per capita in Brazil had fallen to 74% of the 1977 figure [IBASE, 1984a], leading to significant increases in the prices of basic food items well beyond the annual inflation rate and obliging the government to import an increasingly large proportion of domestic food requirements.

In eastern Amazonia itself, due to the disenfranchisement of small cultivators by cattle ranching and hoarding of land for

speculative purposes, serious problems have arisen in maintaining supplies of basic food commodities to major urban centres such as Belém [Hecht, 1983]. The image of the subsistence farmer producing only to meet family requirements is by and large a myth perpetuated by policy-makers anxious to substitute traditional methods with new technology. Research in Amazonia has demonstrated that small squatter cultivators not only farm more efficiently than mechanized units [Andrade, 1983] but also that they enjoy a large surplus and are well integrated into the market through a highly structured chain of intermediaries [SMDDH, 1985; Santos, 1985]. The gradual reduction in relative size of this class of traditional producers is already having serious repercussions on both localised and regional food supplies.

The emphasis on cash cropping evident in other parts of Brazil is gradually being extended to Amazonia where official support for agricultural expansion has been directed towards stimulating export produce such as soya on the cerrado based on Japanese capital [San Martin, 1984; IBASE, 1984c] as well as cattle ranching, described in greater detail below. As will be shown, agricultural development plans for the Carajás programme have been based almost exclusively on production of cash crops for export. Even small farmer directed colonisation in other frontier zones has been projected on the basis of export crops such as coffee, cocoa and rubber [World Bank, 1980]. This is not to deny the value of commercial non-food production, but to stress the dangers inherent in official policies which give no credit, extension or price support to semi-subsistence farmers, and which

could result in a situation of localised or regional food deficit. Although direct comparisons between Brazil and other countries are difficult, many argue for example that a rapid expansion of cash crops for export at the expense of domestic needs has contributed significantly to the food crisis in Africa [Dinham and Hines, 1983: Timberlake, 1985].

BLOCKED ACCESS IN AMAZONIA?

Government backing for the rapid colonisation of Amazonia since 1964 to the present day has had a contradictory impact on the self-provisioning peasantry in Brazil. On the one hand it has facilitated access to frontier zones through its highway-building programme, but on the other it has built in no safeguards to protect small producers from land-grabbers. On the contrary, it has encouraged land-grabbing by providing generous subsidies to large landowners. From the above statistics on property ownership it is evident that the skewed distribution which is typical of traditional agricultural regions in the Centre-South and North-East has been reproduced in Amazonia. Some argue that this has been deliberate official policy in order to deny small farmers substantial and permanent access to land, reserving most of Amazonia for commercial interests in a process of 'pre-emptive occupation' [Branford and Glock, 1985]. Such blocked access has been a major factor accounting for the scale of violent land conflicts currently observable in eastern Amazonia and which are likely to be exacerbated by the Carajás programme.

A brief look at the history of Amazonian development since the military took power shows how this process has built up. Until

the 1950s Amazonia's economy was based on sporadic extraction of native forest products such as nuts, rubber and timber. The nineteenth century rubber boom had encouraged some migration from the North-East following the 1877-79 drought. After 1900 a series of droughts encouraged further movements of beleaguered peasants westwards, while at the same time wealthier farmers moved from the south into Goiás. Before 1964 federal intervention was confined to that initiated through the Superintendency for the Valorization of Amazonia (SPVEA) set up in 1953 to encourage the production of raw materials, regional self-sufficiency in food, the improvement of transport and health facilities and urban growth [Mahar, 1978]. Its major achievement was the building of the 2,000 km Belem-Brasília highway, the first of many major roads which cross Amazonia, and which facilitated the first large scale penetration of the region by small farmers. The military regime saw in Amazonia a region of vast potential which had to be more systematically and aggressively developed. Consequently, 'Operation Amazonia' was launched and the Superintendency for the Development of Amazonia (SUDAM) was established in 1966, modelled on the lines of its sister organisation in the North-East (SUDENE), which had been set up in 1959. SUDAM offered tax exemptions of between 50-100% to investors from the South and from abroad, principally for cattle ranching. The funds thus acquired were placed with the newly created Bank of Amazonia (BASA) and used in the service sector, agriculture and industry. Between 1966 and 1969 some 162 cattle projects were set up with tax rebates totalling £75 million [Branford and Glock, 1985].

What appeared at the time to be a sudden policy change took place in 1970 when, following the disastrous North-Eastern drought, President Medici announced the First National Development Plan (1970-74) and the Plan for National Integration (PIN), a major feature of which was construction of the Trans-Amazon highway. The plan had a major 'social' objective, to absorb labour forced out of the North-East by a combination of drought and an increasingly polarised landownership structure [Hall, 1978] and absorb it on directed colonisation projects along the highway, uniting 'men without land to land without men'. However, other motives were of equal if not greater importance. At a general level the new highway symbolised Brazilian national unity and economic progress and, it was hoped, would serve to diffuse internal political conflicts [Klienpenning, 1979]. It would also facilitate access for the exploitation of Amazonia's natural resources whose potential was becoming evident, while the strong highway-construction lobby in southern Brazil also exerted pressures to expand the road network. Political-strategic factors also entered into the equation, for it was reasoned that the Trans-Amazon would allow greater military penetration and control over eastern Amazonia in view not only of the small but threatening Araguaia guerrilla movement which was started in 1966 and finally destroyed in 1975 [Bourne, 1978; Portela, 1979], but also as a defensive measure against possible foreign invasion of the region [Reis, 1972].

The policy of 'social' colonisation was to prove a grave disappointment. By 1974 barely 6% of the target of 100,000 families had been resettled along the highway [Fearnside, 1984]

mainly because the National Institute for Colonisation and Agrarian Reform (INCRA) was simply not equipped to absorb the large number of applicants. Adequate resources were not forthcoming and the planned settlements with farmer support services such as credit, suitable seeds, fertilizers and insecticides did not materialise as colonists had been led to believe they would [Martine, 1980; Moran, 1985].

Officials attempted to 'blame the victims' [Wood and Schmink, 1979] by suggesting that the colonists were at fault in being totally unprepared for life in Amazonia. Yet for every official colonist there were four or five who established themselves independently in the region with little or no government assistance [Martine, 1980]. The economic success of officially-sponsored small farmers was also compromised by the fact that technicians discovered only late in the day (for no feasibility studies had ever been undertaken) that the fragile Amazonian soils were unsuited to sedentary cultivation of the traditional short-cycle subsistence crops that formed the mainstay of the peasants' diet. Since the heavy inputs of necessary fertilizers and pesticides were not forthcoming, many colonists were obliged to abandon their 100 ha plots, heavily indebted to INCRA. In addition to technical problems, however, southern businessman anxious to gain access to government subsidies, exerted pressure through the Association of Amazon Businessmen (AEA) to abandon what they called a 'pseudo-populist' policy [Branford and Glock, 1985].

Any serious pretensions to serving small farmer interests were largely abandoned from 1974 with the Second National Development Plan (1975-79) and the POLAMAZONIA proposals which were based on selective investment in 15 major development poles, of which Carajás was one. The government now affirmed its belief in boosting agricultural production through the creation of a 'solid agribusiness sector' which it saw as 'the only type of farming which can produce an agile response to the need to increase national production of food-stuffs' [Voice of Brazil radio, May 1974, cited in Branford and Glock, 1985, p. 73]. On the lands once reserved by INCRA for 'social' colonisation along the Trans-Amazon Highway, large corporations and private businessmen from the south replaced small farmers and drought victims as the major beneficiaries. Plots of 500 to 3,000 ha were sold off amounting to 1.7 million ha between 1975-77 or nearly twice the amount distributed to smallholders up to 1974 [Fearnside, 1984; Bourne, 1978].

By 1978 some 358 cattle projects with tax rebates totalling £444 million had been authorised by SUDAM, which had thus speeded up the penetration process and created soaring land values. The four largest ranches (owned by the Ometto group of Sao Paulo, the Cetenco construction company, the Brazilian National Credit Bank and Volkswagen) obtained tax rebates of £47 million, with Ometto's 560,000 ha Suia-Missu project receiving almost half of this total [Branford and Glock, 1985]. Even the FAO and the World Bank, the latter with a \$6 million loan in 1974, provided financial aid for cattle-raising to boost beef exports (of cooked meat) for foreign and domestic markets, paralleling to some extent a similar process

in Central America where the rainforest has been rapidly cut down to meet U.S. demands for beef as part of the 'hamburger connection' [George, 1977; Veiga, 1975; Caulfield, 1986].

Initial optimism over the financial returns to cattle raising in Amazonia were tempered by the failure of many ranches due to problems of declining soil fertility, soil compacting, weed invasion, leaching and erosion. These were seriously exacerbated by the drastic methods used to clear the land of forest cover, which included the use of chains pulled by bulldozers and chemical defoliants, setting in motion an irreversible process of environmental degradation [Goodland and Irwin, 1975; Sioli, 1983; Caulfield, 1986]. It was accurately predicted by independent observers that cattle yields would fall far short of official targets [Fearnside, 1979; Hecht, 1981]. Added to these obstacles were the practical difficulties of administering isolated ranches without the necessary managerial expertise.

Rapid profits had been made in the early 1970s at a time of high beef prices and heavy SUDAM subsidies but this situation changed towards the end of the decade when the government greatly reduced these incentives, having realised that the scheme had become little more than a front for obtaining 'free money' which was subsequently spent or invested in other sectors. It has been estimated, for example that latterly these ranches actually had only 36% of the cattle stated in their original investment proposals used to obtain subsidised funding [Branford and Glock, 1985]. What had happened was that land became the main commodity rather than beef which, contrary to popular myth and official

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expectations, had never become a major export from Amazonia. Ranchers were able to make large capital gains as result of government subsidies which fuelled land speculation and accelerated environmental degradation [Hecht, 1985: Pinto, 1986b].

In addition, the ranches had created very little employment in relation to the total amount invested by the government, each estate bringing one job per two thousand cattle or per 12 square miles, in contrast the 100 people per square mile which can be supported by peasant agriculture in the tropical rainforest [Caulfield, 1986]. In the municipality of São Felix in the eastern Amazon region, for example, 29 cattle ranches with one and a half million ha of pastureland generated only 200 permanent and 750 temporary jobs [Wagner, 1985]. The few permanent jobs created cost on average \$63,000 each, or double that of a job in the industrial sector [Veiga, 1975: Skillings and Tcheyan, 1979].

Social conflicts were greatly exacerbated by the failure of landowners and local authorities to observe basic rules. Every ranch was supposed to obtain a declaration from the local council and the indian agency FUNAI that there were no occupants on the land intended for cattle development but this precaution was usually ignored and has given rise to many violent clashes. By the end of the 1970s only the largest and most efficient livestock producers were receiving official subsidies, while most landowners were increasingly motivated by property speculation rather than long term investment, in the hope that infrastructural developments would allow profitable land sales at a future date.

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One way of doing this was by setting up private colonisation schemes, selling off to land-hungry peasants at relatively high prices (of £100 to £150 per ha) property which had been acquired almost free of charge. Several such projects have been established covering some two million ha (e.g. Sinop, Cotía, Alta Floresta, Juruena, Cotrijuí and Tucumã, etc.) [Branford and Glock, 1985]. The onus of proving the economic viability of farming in the tropical rainforest has thus been transferred to the colonists. Those with capital and expertise have started to gain a foothold in the region but the main beneficiaries are migrants from the South and the schemes remain largely inaccessible to the mass of landless rural labourers and poor squatters with no resources.

CARAJAS AND THE AGRARIAN CRISIS

By the beginning of the 1980s cattle ranching had become discredited as a major stimulus to the long-term development of Amazonia and the government now placed its hopes on the mining sector. Although such activities are not new to the region the Grande Carajás Programme which was officially inaugurated in 1980, is by far the largest and most ambitious plan ever devised for the comprehensive mineral exploitation of eastern Amazonia. It is argued here that agricultural development plans formulated to complement mining activities in the PGC will only worsen the agrarian crisis and place even greater pressure on an already hard-pressed small farming sector in Amazonia where the frontier is rapidly closing up despite the popularly held image of limitless territory available for occupation. Even the distant

and more recently colonised state of Rondônia in the scene of growing land conflicts [Mougeot, 1985a].

Before discussing the agricultural aspects of Carajás it is worth describing the major components of the PGC as a whole. The programme covers some 800,000 square kilometres in the states of Maranhão, Pará and Goiás, or 10.6% of Brazil, an area the size of Britain and France combined. Officially started in 1980, an interministerial council was created for the programme, attached directly to the office of the President of the Republic and headed by the Minister of Planning. Involving an estimated investment of \$62 billion, the backbone of the scheme will be the mining and processing of a wide range of ferrous and non-ferrous metals, in which Brazil expects to be self-sufficient by 1990 [LACR, 31 August, 1984]. These include 18 billion tonnes of high-grade iron-ore, reputedly the largest in the world and a host of others such as manganese, bauxite, nickel, cassiterite, copper and gold [Brazil, n.d.: Cota, 1984]. Apart from the Carajás iron-ore complex itself, the other major mining enterprises consist of two integrated aluminium projects, Alumar in São Luís which is a partnership between Alcoa (USA) and Billiton Metals (a subsidiary of Royal Dutch/Shell) and Albrás-Alunorte in Barcarenas, near Belém, which is funded by a consortium of 30 Japanese aluminium smelters and the Japanese government (known as the Nippon Amazon Aluminium Company) jointly with the Brazilian state-owned Companhia Vale do Rio Doce (CVRD), which also has charge of the iron-ore project.

Vast infrastructural improvements are underway to accompany the expansion of mining and substantial investments are planned

for the growth of rail, road, river and air transport. Two major port developments at São Luis and Barcarenas will enable deep draught ships to export mineral products, while a new 900 kilometre railway links the Carajás iron-ore centre to São Luis, carrying both freight and passengers. The Tucuruí hydro-electric scheme on the River Tocantins, the largest ever built in a tropical rainforest, will generate 5,000 MW of electricity to be used primarily for aluminium smelting, to be offered to investors at heavily subsidized prices [Barham and Caulfield, 1984]. One of the side-effects has, however, been to displace up to 35,000 people from their homes, creating severe resettlement problems which have not been satisfactorily resolved [Mougeot, 1985b].

The stated aim of the PGC is to exploit Amazonia's natural resources in order to generate foreign exchange through exports of both industrial and agricultural commodities as a means of helping to service the Brazilian foreign debt [IBASE, 1983]. Foreign funding is playing a major role. The EEC is providing a \$600 million loan for iron-ore mining, while Japan is supplying \$450 million and the World Bank a further \$305 million of a total initial investment of \$4.9 billion [World Bank, 1982: LARR, 17 October, 1982]. Steel companies in EEC countries have signed long-term contracts with the CVRD for iron-ore at undisclosed 'favourable' prices [Caulfield, 23 March, 1984]. Investors have also been given incentives such as 100% exemption from payment of income tax (now only 50%) for funds invested in the PGC. Additional incentives include generous import quotas, priority in the allocation of bank credit, infrastructural improvements,

subsidised electricity prices and indirect inducements such as lax controls on environmental pollution and deforestation, as well as the availability of cheap labour [Jornal do Brasil, 29 July, 1984; Caulfield, 23 March, 1984].

The first appraisal of export potential associated with mining and infrastructural development of the Carajás region was prepared by Japanese consultants at the request of the CVRD. It is very much in the mould of Japanese recommendations for large-scale commercial farming in the central Brazilian plateau (cerrado) [San Martin, 1984]. It suggests that Carajás should become an 'export corridor' based on agriculture, ranching and forestry on 10,000 ha estates [International Development Centre of Japan, 1980]. These proposals were subsequently refined and published by the CVRD [1981]. Rural schemes would take up ten million ha, of which three million ha would be divided up into 300 cattle ranches of 10,000 ha each, despite the wealth of accumulated evidence which seriously questioned the long-term viability of livestock rearing in Amazonia. A further four million ha would be devoted to large-scale rice growing while 2.4 million ha would be for sugar and manioc plantations, where some 800 distilleries were to produce 5.4 billion litres of alcohol per annum [Pinto, 1977]. The total cost of the scheme would be some \$11 billion. Even more recent proposals by the CVRD re-emphasize the role of highly capitalized, export-oriented farming. Low capital units are ruled out as unsuitable for the region which, it is suggested, will need mechanized farming and expensive inputs to produce adequate yields [CVRD, 1984].

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The Japanese consultants' next report was published in 1983 after they had examined prospects for a range of 28 agricultural products. Its tentatively optimistic conclusions suggested that certain 'mature' products such as soyabean, palm oil and rubber, which are well established on international markets, have considerable scope for expansion in the region. Others such as guaraná, Brazil nuts, charcoal and tropical fruits merit more caution due to production and marketing constraints [JICA, 1983].

The latest JICA study is rather more detailed and contains suggestions for agriculture, livestock and forestry development of the PGC area. Its general objectives are (a) more efficient land-use, (b) to improve the livelihoods of small farmers and to eradicate traditional shifting cultivation, increasing production of basic food crops such as rice, beans, cassava and maize (c) to increase the competitiveness of commercial crops such as soyabean, rubber and palm oil, as well as beef cattle, which are all thought to have great potential for expansion, and (d) to promote 'harmonious development' and environmental conservation [JICA, 1985, p. 23]. Noting that 35% of the arable land in the PGC region is still unused, four farm models are proposed of 50 ha and 100 ha for food crops, 200 ha for oil palm and 500 ha for soyabean. Rational forestry exploitation and management is also suggested.

A number of inconsistencies and contradictions are apparent in these plans. Firstly, as the report itself states, the recommendations for small farmer development are based on a number of fundamental assumptions regarding improvements in their access

to land titles, credit, research, extension and marketing facilities, as well as a more favourable pricing system. Yet it is common knowledge that large producers monopolise such advantages and that, without drastic changes in government policy, this situation is unlikely to change. Secondly, although the JICA report acknowledges the heavily skewed land ownership structure in the region, it makes no reference to the widespread land conflicts and direct clashes of interest between small farmers producing largely for their own needs and commercial producers whose economic and political strength would dictate their almost inevitable monopolisation of any additional such resources for the region. Japanese recommendations for the development of Carajás have not so far been implemented, but it is probable that the ideas expressed have influenced subsequent plans.

By far the most comprehensive plan for the development of agricultural and related activities in the Carajás region is the Programa Grande Carajás Agrícola (PGCA) prepared by the Ministry of Agriculture [Brazil, 1983]. Budgeted at \$1.18 billion,^{it} draws much of its inspiration from JICA reports with their emphasis on large-scale, commercial, export-oriented production using capital-intensive, 'modern' (non-indigenous) techniques. Its stated objectives are to increase agricultural productivity and employment opportunities, to halt environmental degradation and to reverse the trend towards land concentration by creating a class of small family farms. Yet, in common with previous proposals, these ideals are not matched by appropriate measures or funding.

Specific components of the PGCA include 238,000 ha for mechanised soyabean cultivation, 12,600 ha of sugarcane, 417,000 ha of pasture for beef cattle which are deemed to be 'well-suited' to Amazonia and a special 'sanitary pocket' of 225,000 ha where hoof and mouth disease and undulant fever would be eliminated, thus opening up new markets in the USA, Japan and Europe for unprocessed beef. In addition, 3.6 million ha along the Carajás-São Luis railway are to be set aside for Eucalyptus plantations to provide charcoal for pig-iron smelting. The focal points would be seven development 'poles' containing 17 farming systems for small (up to 15 ha), medium and large (60-68 ha) and large (80-500 ha) producers.

Despite the report's recognition of the existence of land conflicts and the apparent desire to provide for small farmers, there is a continuing latifundio bias. Although the PGCA talks of easing social tension and of distributing land more equitably, only 17% of the land is in fact allocated to small farmers while 47% and 36% is set aside for large and medium producers respectively. This policy would not attack but mirror existing inequalities in the PGCA area, where properties of over 1,000 ha account for 0.7% of landowners but occupy 51% of the agricultural land. The emphasis on ranching, which is expected to generate \$41 million per annum in animal products, blatantly ignores the historical association of pasture formation with land concentration, violent conflicts and environmental degradation. Furthermore, little employment is created by large units, yet small farms which offer 16 times as many jobs per hectare, are relatively insignificant in the overall plans [Brazil, 1983:

Fearnside, 1986]. Territorial rights of the 25 indigenous groups with 10,000 members in the PGC region would be put under increased pressure [Ferraz, 1982]. These fears are reinforced by evidence highlighting the danger that indian groups will benefit very little from the injections of new funds and that they are likely to introduce distortions into the communities if not administered properly [Gomes, 1984]. Low priority is attached in budgetary allocation to social projects such as cooperatives, colonization and agricultural research (15%) while a high priority is given to credit for large producers, transport and agro-industry (70%) [Brazil, 1983; Fearnside, 1986].

The widespread deforestation that is associated with pasture formation (responsible for 38% of deforestation in Amazonia according to one estimate [Caulfield, 1982]) and commercial crop production is likely to exacerbate already observed environmental problems such as climatic changes, loss of species and soil nutrients, soil erosion and the associated siltation of reservoirs. It has been suggested, for example, that the rainforest supplies up to 50% of the moisture which returns to the region as rainfall. Destruction of the forest is therefore likely to produce semi-drought conditions [Sioli, 1983]. The setting up of vast Eucalyptus plantations would also increase the risks of disease, pest invasion and soil degradation, as has happened elsewhere in Amazonia such as the Jari scheme [Fearnside and Rankin, 1985].

Following the change of government which took place in March, 1985 plans for implementing the PGCA have been at least

temporarily suspended. Questions raised about the financial, administrative and technical feasibility of the scheme by the Inter-American Development Bank, as well as a shortage of domestic funds, have raised doubts over its future. Yet the Carajás programme as a whole still retains specific provisions for the development of agriculture and livestock. Firstly, such projects are still being set up within the framework of the PGC tax incentive scheme. Secondly, initial plans have been made for two small 'integrated rural development' community projects in the states of Pará and Maranhão which, although modest in scope, nevertheless represent a departure from the priorities evident in previous proposals. In addition to these, other official measures in the region not directly associated with Carajás will have important repercussions on the agrarian situation within its sphere of influence. These are the SUDAM tax incentives, land titling and colonisation by GETAT and the recently approved National Plan for Agrarian Reform (PNRA).

In an attempt to maintain some direct responsibility for planning agricultural development within its area of jurisdiction, the Executive Secretariat of the PGC has announced two small 'integrated rural development projects' on the Carajás-São Luis railway in areas chosen for their concentration of small farmers and degree of existing community organisation [Brazil, 1986: Gistelnicck, 1986]. Alto Alegre, near Santa Luzia in the state of Maranhão, consists of some 1,500 families of squatters (posseiros) and tenant farmers (arrendatários) which have been reasonably successful in resisting incursions by land-grabbers (grileiros) in a region which has generally been characterised by

violent land conflict since the mid-1970s. Alto Alegre thus has a history of community cohesiveness based on strong local political organisation [Gistelnicck, 1985 and n.d.]. Sororó, near Marabá in the state of Pará, was titled by GETAT (see below) in 1980 and consists of 160 small plots of land covering an area of 15,000 ha. It is a recently formed set of three communities and lacks such a tradition of community initiative [Falesi, 1986].

Plans for these two areas involve improvements in agriculture, transport, health and educational facilities, as well as land titling in Alto Alegre. In Sororó it is hoped to 'create' (sic) a stronger community organisation by obliging farmers from the communities to meet regularly. In addition, the Brazilian Agricultural Research Organisation (EMBRAPA) will attempt to introduce a new crop system to supplement food crops with cash-earning perennials such as rubber, pepper and citrus fruits [Falesi, 1986]. It is hoped that, if successful, these schemes can be replicated at strategic points along the 900 km railway, creating a stable class of small farmers. Yet it remains to be seen whether the required degree of cooperation among the various government organisations involved can be achieved, and whether the necessary financial resources will be forthcoming. In any case, the limited scale of the exercise signifies that the vast majority of small farmers and landless labourers in the PGC area will be unaffected by these proposals.

The major direct stimulus offered by the PGC to agricultural development lies in the fiscal incentive scheme, instituted by Decree-Law 1,825 of 22 December, 1980. This originally allowed

investors in the PGC to enjoy 100% exemption from payment of income tax over a ten year period, in addition to exemption from payment of import duties and other advantages. The law has recently been changed to concede only 50% exemption, while the remaining 50% will be channelled towards developing social infrastructure and small enterprises in the PGC [Brazil, 1985a: Brazil, 1985b]. However, it is evident that the projects so far approved under this legislation will only exacerbate the agrarian crisis in the region. Although agricultural enterprises have received less than 1% of total funding and the scheme is in its infancy, it seems likely that the projects being subsidised will encourage pasture formation, land concentration and environmental deterioration. The handful of agricultural projects so far approved includes palm oil processing, cattle ranching, forestry and an ethanol distillery producing alcohol from sugarcane [Brazil, 1985c].

Perhaps more importantly, however, incentives for mineral processing are certain to have an immediate and widespread repercussions on the position of small farmers in the PGC. Some eight pig-iron smelting projects have been approved along the railway, with two in Marabá and five in Acailândia [Brazil, 1985c: Brasil Mineral, January, 1986: Salles, n.d.]. Pig-iron smelting requires large quantities of charcoal, 25 million tons annually in the PGC according to one estimate [Pinto, 1977]. This was originally to be supplied by Eucalyptus plantations along the highway but, in the short term at least, demand is likely to be met by using the local population to supply charcoal, thus encouraging indiscriminate felling of the tropical rainforest. This may

provide immediate supplementary income to farmers and indigenous groups but would invariably speed up the permanent destruction of the rainforest and the environmental risks already mentioned above.

The PGC area is included within SUDAM's area of influence so that entrepreneurs also have access to an additional set of fiscal incentives through the Investment Fund for Amazonia (FINAM). Although SUDAM does not publish disaggregated figures to show the distribution of its subsidies, examination of recent project approvals demonstrates that the traditional emphasis on agro-industrial and livestock units in rural areas continues. Over the last three months for which figures are available (September to November, 1985) of 64 projects approved 40 fell into this category [SUDAM, 1985].

In addition to PGC and SUDAM fiscal incentive schemes, another major influence on rural development within the Carajás programme area is provided by the Executive Group for the Araguaia-Tocantins Region (GETAT), set up in 1980 and responsible for regulating land ownership in an area of 45 million ha. A similar body (GEBAM) was set up for the Lower Amazon which includes the Jari scheme. GETAT is by far the more important of the two, covering an area equal to half of the PGC region centred around the most volatile land conflict zone in Amazonia where the states of Maranhão, Pará and Goiás meet, sometimes referred to as the 'Parrot's Beak' (Bico do Papagaio) due to its shape. Directly subordinate to the National Security Council, GETAT originally formed part of the Ministry of Land Affairs; now the Ministry of

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Rural Development and Agrarian Reform (MIRAD). GETAT was granted special powers to expropriate land, to grant titles and initiate colonisation schemes [GETAT, 1986a].

As regards land titling GETAT's record appears impressive at first sight, with 58,383 titles granted up to December 1985, increasing to 62,000 by mid-1986. Just over eight million ha have been demarcated altogether, amounting to some 18% of the total programme area [GETAT, 1986b and 1986c]. However, in terms of guaranteeing small farmers access to land free of pressures from land-grabbers in which they can earn a livelihood, GETAT's operations have been less successful. Social scientists, church authorities and the National Confederation of Rural Workers (Contag) have all criticized GETAT as a 'mopping up' operation which, instead of controlling the presently chaotic occupation of land, has merely consolidated a highly inegalitarian structure, thus increasing rural violence [LARR, 23 April, 1982 and 11 February, 1983; Souza Martins, 1984].

Direct evidence of this comes from GETAT statistics themselves. Most recent data [GETAT, 1986a] is not disaggregated, but that published for 1983 shows that plots of up to 100 ha accounted for 72% of titles but only 5% of the land distributed by the organisation. At the other extreme, properties of over 1,000 ha, which accounted for 1% of new titles, occupied over 32% of the land, with one estate of 400,000 ha taking up 12% of the area distributed [Wagner, 1985]. Many smallholders are put at a disadvantage by being granted plots much smaller than the 100 ha official minimum for Amazonia [LARR, 13 March, 1981; GETAT, 1986c]. The apparent exacerbation of land concentration through

GETAT thus lends further credence to suggestions that Amazonian development policy is concerned primarily with reserving land for exploitation by large, export-oriented commercial enterprises at the expense of the mass of small farmers. A major stated objective of GETAT's is the diffusion of violent land conflict [GETAT, 1986a], which it attempts by resettling small producers away from the areas under dispute. Yet this is accomplished with scant regard for maintaining family or community cohesiveness [Wagner, 1985]. Arbitrary relocation of squatters is thus destroying many traditional collective practices which offer mutual support essential for agricultural production, as well as denying them access to communal areas for the practice of shifting cultivation.

GETAT's second major activity is directed resettlement on three colonisation schemes, Carajas I, II and III located near the iron-ore mineral complex and embracing a total area of 636,000 ha. Of the three projects only the latter two are currently operational, with 1,551 families in receipt of 50 ha and 100 ha plots [GETAT, 1986c]. Candidates are taken from areas of land conflict and put through a rigorous selection process involving social, economic and psychological criteria which eliminate many on minor grounds and place a high priority on conformity to the fairly authoritarian management structure. A common complaint is the lack of inputs for small farmers such as credit, seeds, suitable extension advice and marketing channels [CPT, 1986]. As a result, many colonists become rapidly disillusioned and transfer the land, at a price, to a newcomer who then takes on any

accumulated debts to INCRA. Rather than constituting an 'irrational' submission to 'nomadic instincts' as maintained by officials [GETAT, 1986c], this may be viewed as a perfectly logical economic response by a hard-pressed peasantry unable to earn a living under existing conditions and driven to explore more distant frontier areas, to migrate to the city or to prospect for gold in order to maximise their incomes.

Of all the parallel federal interventions in the PGC area perhaps none has so great a potential, in theory at least, to improve the livelihoods of smaller cultivators as the National Plan for Agrarian Reform (PNRA), approved by the government in October, 1985. Based on the Land Statute (the Estatuto da Terra, Law 4,504) of 30 November, 1964 its main objective is the redistribution of underutilised public and private lands to squatters and landless workers. The land, to be paid for by its new owners over a 15 year period, would be worked either as individual, independent family units or as cooperative exercises on directed colonisation projects. Landowners would be compensated in Agrarian Debt titles (Títulos de Dívida Agrária). From 1985-2000 it is hoped to resettle 7.1 million families, with 1.4 million between 1985-89. It is thus hoped to increase food and raw material production for domestic purposes, to provide rural employment, to diminish the rural exodus and bring 'peace' to the countryside [MIRAD, 1985b].

Regional land reform plans were finally approved by the federal government in May, 1986 after undergoing several revisions which successively weakened the proposed changes. The announcement was made following a sudden intensification of

rural violence in the Carajás area which resulted in the deaths of a number of rural syndicate leaders, culminating in the well-publicised death at the hands of hired gunmen of a Brazilian priest working with the poor [Ashford, 1986]. From 1985-89 in the state of Pará 75,200 families are to be resettled [MIRAD, 1985b: Diário Oficial, 1986]. Initial plans prepared at regional level identify nine estates covering 114,000 ha and involving 1,490 families [INCRA, 1986]. By 1990 this will be increased to 111,000 families involving 16,136 families from 48 estates covering a total area of 965,000 ha [MIRAD, 1986]. In Maranhão 118,000 families are to be resettled from 1986-89, with 12,700 in the first year alone involving an area of 422,000 ha [Diário Oficial, 1986]. In Goiás during 1986-89 some 125,500 families will be catered for, with 13,500 in 1986 over 898,000 ha [MIRAD, 1985b: Diário Oficial, 1986].

However a serious questionmark must be raised over the likelihood that the agrarian reform proposals will ameliorate the agrarian crisis in Amazonia as a whole and, more specifically, within the Carajás programme area. In fact, as will be shown below, they might well have the opposite effect. Firstly, the regional targets for 1985-89 contained in the main proposal document greatly exceed initial priority goals drawn up at state level. In Pará, for example, of 75,200 families to be resettled in four years, only 16,136 have so far been included in concrete proposals.

A second major objection arises from the fact that the PNRA will not expropriate properties of whatever size as long as they

are considered to be on-going 'rural enterprises' (empresas rurais). This represents a significant departure from the 1964 Land Statute which provided for the expropriation of all latifundia beyond a given dimension even if they were productive in some way [MIRAD, 1985b; Graziano da Silva, 1985]. The original land reform proposals of May 1985 did in fact make such a provision [MIRAD, 1985a] but, following intense political pressure, it was eventually modified. Also excluded are properties of less than three times the module size for a given region [MIRAD, 1985b]. Huge estates which are nominally 'productive' will thus remain untouched and the degree of land concentration basically unaltered despite the agrarian reform.

A third criticism relates to the assumption that with the resettlement of 7.1 rural workers by the year 2,000 the problem of landlessness would be eliminated for good. The PNRA's projections do not take into account the fact that throughout the intervening 15 years more and more landless labourers will enter the job market taking the total number to be accommodated well beyond the original 7.1 million target [Graziano da Silva, 1985]. Another area of doubt surrounds the assertion that new property owners would receive the government support in terms of credit, extension, and other services essential in order to strengthen the position of the small producer under a new National Policy for Agricultural Development (PNDA) of which the agrarian reform plans form part [MIRAD, 1985b]. This would require a major redistribution of both federal and state funds away from the traditionally favoured large-scale commercial farmers and land speculators and towards the mainly food-producing small farm

sector. Financial and logistical support on such a scale is unlikely to be forthcoming without more fundamental changes in property ownership than those currently proposed, and without concomitant political action by the government in support of small farmer interests.

This final point touches upon the crux of the matter. The agrarian reform plans do not alter in any way the basic forces which continue to exacerbate the agrarian crisis in Amazonia. They may even make matters worse in some cases where landowners are hurrying to clear their properties of forest and establish projects with federal money as proof that they are economically 'productive' and therefore not eligible for expropriation. In addition, it has been alleged that most expropriations are voluntary from usually absentee landowners who are pleased to sell off their 'unproductive' properties to the government at profitable market prices [CPT, 1986a; Emater, 1986].

CONCLUSION

If agrarian reforms in Brazil will leave the structure of landownership basically unchanged, other government interventions are likely to worsen land concentration and other symptoms of the agrarian crisis as defined above. Official Amazonian development policy has encouraged this process since the early 1960s and shows every sign of continuing to do so in the foreseeable future. This is evident in proposals for the Grande Carajás Programme, with its continued emphasis on socially and economically polarising measures in the agricultural sector. The government provisions for Amazonian development examined above appear to have at best

only token regard for the population of small farmers and their families, of which there are an estimated 750,000 in the Carajás project zone [SBPC, 1983].

It is beyond the scope of this paper to examine in detail the relationships between State and civil forces in the drive to occupy and 'modernise' Amazonia. One school of thought argues that the State is fundamentally antagonistic towards small farmer interests and, in designing policies of Amazonian occupation, is concerned primarily with reserving land for exploitation by large commercial interests within a process of capitalist expansion [e.g. Branford and Glock, 1985; Souza Martins, 1984; Cardoso and Muller, 1977; Becker, 1982]. Frontier occupation is also seen as reflecting State centralisation of power as it mediates in the class struggle [Foweraker, 1981]. Another view holds that, rather than being equated with a unilinear process of capitalist transformation into a class of rural capitalists and rural proletariat in the classic mode of 'agrarian transition', frontier expansion is based upon a symbiotic relationship of mutual dependence in which large-scale rural enterprises are dependent upon and encourage the maintenance of the small family farm [Goodman and Redclift, 1981]. From a different stand-point, the Brazilian State is sometimes seen as essentially benevolent, but has its social welfare objectives in Amazonia frustrated by inappropriate bureaucratic structures which permit the intrusion of hostile civil interests that destabilise official development programmes [Bunker, 1985]. On a more general theoretical plane the Carajás programme has been described as tool for strengthening

dependent capitalism in Brazil with control over decision-making and production remaining at the core, outside the national economy [Neto, 1986].

Whether or not the State is viewed as antagonistic or conciliatory towards small farmer interests in Amazonia, the fact is that viable development alternatives do exist which would, in theory, permit a more rational use of the area to accommodate in a productive fashion those currently being forced off the land and deprived of a stable livelihood. In order to develop Amazonia and avoid ecological disaster it is perhaps not necessary, as has been suggested [Goodland, 1980] to transfer development interventions to less vulnerable areas such as the grasslands or cerrado to the south. The efficiency and long-term sustainability of indigenous Amazonian or caboclo agriculture, for example, has been well-documented [Moran, 1981; Fearnside, 1985; Posey, 1985]. Research has also been undertaken into new forms of site-specific permanent crop production systems suitable for the acid, infertile soils which cover 70% of the Amazon Basin [Nicholaides, 1983; Alvim, 1980] as well as for the wet and fertile lowlands where annual crops could be developed without damaging the environment [Barrow, 1985]. Fearnside [1983 and 1986] has also suggested alternative practices in the form of 'sustainable agroecosystems' which would integrate with rather than require destruction of the tropical rainforest.

Technically speaking, therefore, alternative agricultural development strategies are open to planners to substitute or at least complement those which have helped to produce the agrarian crisis in Amazonia. Yet it is unlikely that better research inputs

into decision-making themselves be enough to encourage their adoption [Fearnside, 1986; Hall, 1986]. Major development projects such as Carajás will continue to exacerbate the agrarian crisis unless there is a change in political priorities on the part of the Brazilian government and a major redirection of efforts and resources towards dealing with the problems suffered by the mass of poor farming families. In one sense the very scale of conflicts in Amazonia reflects in part a decision by the peasantry to resist land-grabbing and to carry out its own spontaneous 'agrarian reform' by taking possession of and defending with increasing determination the territory necessary to meet their basic needs. The growing number of land invasions in the Carajás region by farmers unwilling to put up with official procrastination in meeting agrarian reform objectives is but the latest manifestation of this frustration. In the long term, however, that State must seriously re-examine its priorities and the policy bias implicit in programmes such as Grande Carajás if it wishes to avoid an indefinite worsening of the agrarian crisis in Amazonia.

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